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| 09/820,459      | 03/29/2001  | Richard Louis Arndt  | AUS920010142US1     | 5645             |

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| EXAMINER |
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CHU, GABRIEL L

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| ART UNIT | PAPER NUMBER |
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2114

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/820,459

Applicant(s)

ARNDT ET AL.

Examiner

Gábríel L. Chu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,7,9-17,19,20,22-28,30,31 and 33-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,7,9-17,19,20,22-28,30,31 and 33-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

**STATUS OF CLAIMS**

1. Claims 1, 3, 4, 9, 12, 14, 16, 17, 22, 25, 27, 28, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6574755 to Seon in further view of US 5379414 to Adams. Prior rejection stands.
2. Claims 2, 15, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6574755 to Seon in view of US 5379414 to Adams as applied to claims 1, 14, and 25 above, and further in view of US 6591324 to Chen et al. Previously rejected.
3. Claims 3, 6, 7, 16, 19, 20, 27, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6574755 to Seon in view of US 5379414 to Adams as applied to claims 1, 14, and 25 above. Prior rejection stands.
4. Claims 1, 3, 4, 9, 12, 14, 16, 17, 22, 25, 27, 28, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser in further view of US 5379414 to Adams. Prior rejection stands.
5. Claims 10, 11, 13, 23, 24, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser in further view of US 5379414 to Adams. Rejection updated under same grounds previously rejected under.
6. Claims 2, 15, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser in view of US 5379414 to Adams as applied to claims 1, 14, and 25 above, and further in view of US 6591324 to Chen et al. Prior rejection stands.

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7. Claims are 6, 7, 19, 20, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser as applied to claims 1, 14, and 25 above.

Prior rejection stands.

8. Claims 5, 8, 18, 21, 29, and 32 cancelled.

***Claim Rejections - 35 USC § 103***

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 1, 3, 4, 9, 12, 14, 16, 17, 22, 25, 27, 28, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6574755 to Seon in further view of US 5379414 to Adams. See prior office action.

11. Claims 1, 3, 4, 9, 12, 14, 16, 17, 22, 25, 27, 28, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser in further view of US 5379414 to Adams. See prior office action.

12. Claims 2, 15, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6574755 to Seon in view of US 5379414 to Adams as applied to claims 1, 14, and 25 above, and further in view of US 6591324 to Chen et al. See prior office action.

13. Claims 2, 15, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser in view of US 5379414 to Adams as applied to claims 1, 14, and 25 above, and further in view of US 6591324 to Chen et al. See prior office action.

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14. Claims 3, 6, 7, 16, 19, 20, 27, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6574755 to Seon in view of US 5379414 to Adams as applied to claims 1, 14, and 25 above. See prior office action.

15. Claims are 6, 7, 19, 20, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser as applied to claims 1, 14, and 25 above. See prior office action.

16. Claims 10, 11, 13, 23, 24, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6711702 to Oberhauser in further view of US 5379414 to Adams. Referring to claims 10, 23, and 34, Oberhauser discloses a method in a data processing system for handling errors, the method comprising: responsive to an occurrence of an error, determining whether the error is a recoverable error (From figure 1, "UNIT RDY? -> n -> Exit STAB -> ..."); responsive to a determination that the error is a recoverable error, identifying at least one slot on a bus indicating an error state (From figure 1, "UNIT REDY? -> y -> DEL\_UNIT\_FROM\_AL"); incrementing an error counter for said identified at least one identified slot (From figure 1, "Incr CNT: m:=m+1"); and responsive to the error counter indicating a number of attempts to recover from the error exceeding a threshold, placing said at least one slot into an unavailable state (From figure 1, "m<mmax -> n -> DEL\_UNIT\_FROM\_AL -> OFF\_SERV"). Although Oberhauser does not specifically disclose the detecting step occurs in a device driver and placing step occurs in a firmware, using a device driver to respond to errors is known in the art and performing operations using firmware is notoriously well known in the art. From the abstract of Adams, "A system and method which provides a complete software

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implementation of a device driver that is capable of detecting an undetectable data corruption problem without hardware redesign and/or internal modification to an existing FDC." A person of ordinary skill in the art at the time of the invention would have been motivated to detect an error with a driver because, from the field of invention from Adams, "eliminates the need for hardware redesign and/or fabrication of new FDCs". Further, Examiner takes official notice for the use of firmware to implement system functionality. An example of this is a BIOS (basic input/output system). A person of ordinary skill in the art at the time of the invention would have been motivated to use a BIOS because it is responsible for basic input and output functionality, provides an interface between the operating system and system hardware, and supports peripheral technologies and internal services.

Referring to claims 11, 24, and 35, Oberhauser discloses responsive to the error counter failing to exceed the threshold, placing said at least one slot into an available state, wherein a device within said at least one slot resumes functioning (From figure 1 of Oberhauser, "m<mmax -> ... -> IN\_SERV").

17. Referring to claim 13, Oberhauser discloses a data processing system comprising: a bus system; a communications unit connected to the bus system; a memory connected to the bus system, wherein the memory includes a set of instructions; and a processing unit connected to the bus system, wherein the processing unit executes the set of instructions to determine whether the error is a recoverable error in response to an occurrence of an error (From figure 1, "UNIT RDY? -> n ->Exit STAB -> ..."); identify at least one slot on the bus indicating an error state in response to

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a determination that the error is a recoverable error (From figure 1, "UNIT REDY?->y->DEL\_UNIT\_FROM\_AL".); increment an error counter for said at least one identified slot (From figure 1, "Incr CNT: m:=m+1".); and place said at least one slot into an unavailable state in response to the error counter indicating a number of attempts to recover from the error exceeding a threshold (From figure 1, "m<mmax -> n->DEL\_UNIT\_FROM\_AL->OFF\_SERV"). Although Oberhauser does not specifically disclose the detecting step occurs in a device driver and placing step occurs in a firmware, using a device driver to respond to errors is known in the art and performing operations using firmware is notoriously well known in the art. From the abstract of Adams, "A system and method which provides a complete software implementation of a device driver that is capable of detecting an undetectable data corruption problem without hardware redesign and/or internal modification to an existing FDC." A person of ordinary skill in the art at the time of the invention would have been motivated to detect an error with a driver because, from the field of invention from Adams, "eliminates the need for hardware redesign and/or fabrication of new FDCs". Further, Examiner takes official notice for the use of firmware to implement system functionality. An example of this is a BIOS (basic input/output system). A person of ordinary skill in the art at the time of the invention would have been motivated to use a BIOS because it is responsible for basic input and output functionality, provides an interface between the operating system and system hardware, and supports peripheral technologies and internal services.

### ***Response to Arguments***

18. Applicant's arguments filed 18 October 2004 have been fully considered but they are not persuasive. Regarding Applicant's argument (page 10) that Applicant's invention is contradistinguished by the terms "recovery attempt" and "error", a recover attempt is interpreted as any attempt to overcome an error, and an error is interpreted as any behavior exhibiting non-standard or erroneous characteristics. Applicant has not claimed Applicant's invention sufficiently to overcome this interpretation.

19. Regarding Applicant's argument (page 11) that placing a hardware component in an "unavailable state" is not taught, an unavailable state is interpreted as a state that is unavailable. This includes, but is not limited to a SCSI bus busy state, unexpected disconnect state of the target device, device not ready state, and unit attention state (Seon).

20. Regarding Applicant's argument (page 13, 23) that detecting a recovery attempt from an error for an operation involving a hardware component using a device driver is not taught, Adams directly addresses this issue. From the abstract, "a device driver that is capable of detecting an undetectable data corruption problem". Further regarding Applicant's argument that Adams is directed to detecting data corruption errors and not a recovery attempt of a hardware component, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Furthermore, Seon discloses



recovery attempts of a hardware component (see abstract). Further still, Oberhauser discloses recovery attempts of a hardware component (see abstract).

21. Regarding Applicant's challenge (page 14) of Examiner's Official Notice for the use of firmware to implement placing the hardware component in an unavailable state, Examiner notes that the proper time for challenging an Official Notice is in the response immediately following the action in which it was used, therefore the challenge presented herein is improper. However, for the sake of argument, Examiner provides the Microsoft Dictionary definition of firmware (with emphasis), "**Software routines** stored in read-only memory (ROM). Unlike random access memory (RAM), read-only memory **stays intact even in the absence of electrical power**. Startup routines and low-level **input/output instructions** are stored in firmware. **It falls between software and hardware in terms of ease of modification.**" This further corroborates Adams, from the abstract (with emphasis), "A system and method which provides a complete software implementation of a device driver that is capable of detecting an undetectable data corruption problem **without hardware redesign and/or internal modification to an existing FDC.**"

22. Regarding Applicant's argument (page 14) that neither Seon nor Adam recognizes a need to store an indication of a recovery attempt, see figure 3, 304 and 306 wherein Seon keeps track of the number of retry times and reset times, respectively.

23. Regarding Applicant's argument (page 15) that Seon nor Adams teaches making a call to a hardware interface layer to place the hardware component into a permanent reset state, for one, Applicant does not claim what the layer interfaces between.

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Regardless, Seon clearly indicates interaction with the hardware component, that interaction being resetting (Figure 3, 307), such interaction requiring some form of interface. Also, as Applicant has previously and ineffectively argued, the degree and extent of permanence of a "permanent" reset state is clearly not without end. From the Applicant's pre-grant publication paragraph 59, "The process begins by determining whether the replacement of the device in a slot marked as permanently reset has been replaced (step 600). This replacement may occur while the data processing system is running by a hot-plug operation. Alternatively, this check may occur when the data processing system restarts or is turned on. In a hot-plug or hot swap operation, a component is pulled out from a system and a new component is plugged into the system while the power is still on and the system is still operating. If a replacement has not occurred, the process returns to step 600. Upon detecting replacement of the device, the slot in which the device is placed is set to an available state (step 602) with the process terminating thereafter."

24. Regarding Applicant's argument (page 18) that Applicant's invention is contradistinguished over Oberhauser by the use of a "normal operation", this normal operation is nowhere claimed.

25. Regarding Applicant's argument (page 19) that if a unit within the Oberhauser system does not start-up within a certain number of start-up attempts, the unit is placed into an out-of-service condition and that this process is not equivalent to responsive to a number of attempts to recover from the error exceeding a threshold, placing the

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hardware component in an unavailable state, Examiner points Applicant to Examiner's interpretation of "recovery" and "error" as stated above.

26. Regarding Applicant's argument (page 19) against the combination of Oberhauser and Adams, see above. In addition, Oberhauser teaches detecting a recovery attempt from an error for an operation involving a hardware component (see abstract).

27. Regarding Applicant's argument (page 21) that Oberhauser in view of Adams does not teach responsive to an occurrence of an error, determining whether the error is a recoverable error, responsive to a determination that the error is a recoverable error, identifying at least one slot on a bus indicating an error state and responsive to the error counter indicating a number of attempts to recover from the error exceeding a threshold, placing said at least one slot into an unavailable state, wherein the determining step occurs in a device driver and placing step occurs in a firmware, see above rejection based on the same grounds as previously applied.

28. Regarding Applicant's argument (page 22) that the reference does not identify a slot on a bus indicating the error state, a slot is not necessarily interpreted as the physical receptacle for a component, but rather a position. This interpretation is supported by Applicant's pre-grant publication paragraph 59, "The process begins by determining whether the replacement of the device in a slot marked as permanently reset has been replaced (step 600). This replacement may occur while the data processing system is running by a hot-plug operation. Alternatively, this check may occur when the data processing system restarts or is turned on. In a hot-plug or hot

swap operation, a component is pulled out from a system and a new component is plugged into the system while the power is still on and the system is still operating. If a replacement has not occurred, the process returns to step 600. Upon detecting replacement of the device, the slot in which the device is placed is set to an available state (step 602) with the process terminating thereafter."

29. Regarding Applicant's argument (page 24) that neither Oberhauser not Adams teaches making a call to a hardware interface layer to place the hardware component into a permanent reset state, see Oberhauser figure 1, "OFF\_SERV", such an interaction requiring some form of interface. Additionally, Applicant does not claim what the layer interfaces between. Also, as Applicant has previously and ineffectively argued, the degree and extent of permanence of a "permanent" reset state is clearly not without end. From the Applicant's pre-grant publication paragraph 59, "The process begins by determining whether the replacement of the device in a slot marked as permanently reset has been replaced (step 600). This replacement may occur while the data processing system is running by a hot-plug operation. Alternatively, this check may occur when the data processing system restarts or is turned on. In a hot-plug or hot swap operation, a component is pulled out from a system and a new component is plugged into the system while the power is still on and the system is still operating. If a replacement has not occurred, the process returns to step 600. Upon detecting replacement of the device, the slot in which the device is placed is set to an available state (step 602) with the process terminating thereafter." Further, Applicant merely alleges (page 24) that placing a unit in an out-of-service state is not the same as placing

the unit in a permanent reset state, however, Applicant makes no further distinction of these two procedures.

***Conclusion***

30. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gabriel L. Chu whose telephone number is (571) 272-3656. The examiner can normally be reached on weekdays between 8:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel, Jr. can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gc

  
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